

WHAT IS CLAIMED IS:

1. A method for classifying defects comprising:

imaging an inspected object;

extracting an image of a defect candidate from an image obtained by said

imaging step;

classifying said extracted defect candidate image into a first category;

classifying said extracted defect candidate image into a second category; and

displaying on a screen said extracted defect candidate image and information

relating to said classification into said first category and information relating to said

classification into said second category.

2. The method for classifying defects as described in claim 1 wherein said imaging of said inspected object is performed by illuminating and scanning an electron beam focused on said inspected object and detecting, in synchronization with said scanning, secondary electrons generated from said inspected object by said illumination.

3. The method for classifying defects as described in claim 1 wherein said first category relates to defect criticality.

4. The method for classifying defects as described in claim 3 wherein said second category relates to defect type.

5. The method for classifying defects as described in claim 4 wherein said defect type includes one or more of the following: particle defects, flaw defects, circuit pattern short defects, and circuit pattern open defects.

6. A method for classifying defects comprising:

imaging an inspected object to obtain an image;

extracting an image of a defect candidate from said image obtained by said

imaging step;

classifying said extracted defect candidate image into at least one defect type;

evaluating criticality of defect of said defect candidate image classified into

said at least one defect type; and

displaying on a screen said defect candidate image along with information

relating to the type of said at least defect type and said criticality of defect.

1           7.    The method for classifying defects as described in claim 6 wherein  
2 said imaging of said inspected object is performed by illuminating and scanning an electron  
3 beam focused on said inspected object and detecting, in synchronization with said scanning,  
4 secondary electrons generated from said inspected object by said illumination.

1           8.    The method for classifying defects as described in claim 6 wherein  
2 said defect types for classification include one or more of the following: particle defects, flaw  
3 defects, circuit pattern short defects, and circuit pattern open defects.

1           9.    A method for classifying defects comprising:  
2 imaging an inspected object;  
3 extracting images of defect candidates from said inspected object;  
4 classifying said extracted defect candidate images into a first category;  
5 classifying said extracted defect candidate images into a second category, said  
6 second category relating to predicted yield from said inspected object; and  
7 displaying on a single screen a distribution on said inspected object of said  
8 defect candidates classified in said first category and information relating to said first  
9 category classification and information relating to results of said second category  
10 classification.

1           10.   The method for classifying defects as described in claim 9 wherein  
2 said imaging of said inspected object is performed by illuminating and scanning an electron  
3 beam focused on said inspected object and detecting, in synchronization with said scanning,  
4 secondary electrons generated from said inspected object by said illumination.

1           11.   The method for classifying defects as described in claim 9 wherein an  
2 image of said defect candidate is also displayed on said screen.

1           12.   A device for classifying defects comprising:  
2 an imaging component to obtain an image of an inspected object, having a  
3 defect candidate;  
4 an extracting component, coupled to said imaging component, to extract an  
5 image of said defect candidate;

6 ~~a first classifying component, coupled to said extracting component, to~~  
7 ~~classify said image of said defect candidate into a first category;~~  
8 ~~a second classifying component, coupled to said extracting component, to~~  
9 ~~classify said image of said defect candidate into a second category; and~~  
10 ~~an outputting component, coupled to said first and second classifying~~  
11 ~~components, to output said image of said defect candidate and first category information of~~  
12 ~~said defect candidate and second category information of said defect candidate.~~

1 13. The device for classifying defects as described in claim 12 wherein  
2 said imaging component includes:

3 an electron beam optical system to illuminate and scan an electron beam  
4 focused on said inspected object;

5 a detecting component to detect, in synchronization with said scanning,  
6 secondary electrons generated from said inspected object by said illumination of said electron  
7 beam focused on said inspected object by said electron beam optical system; and

8 an imaging forming component to form an image based on said secondary  
9 electrons detected by said detecting component.

1 14. The device for classifying defects as described in claim 12 wherein  
2 either said first classifying component or said second classifying component classifies said  
3 defect candidate in a category relating to defect criticality.

1 15. The device for classifying defects as described in claim 12 wherein  
2 either said first classifying component or said second classifying component classifies said  
3 defect candidate in a category relating to defect type.

1 16. The device for classifying defects as described in claim 15 wherein  
2 said defect type includes one or more of the following: particle defects, flaw defects, circuit  
3 pattern short defects, and circuit pattern open defects.

1 17. A device for classifying defects comprising:

2 means for imaging an inspected object;

3 means for extracting defect candidates extracting an image of a defect  
4 candidate from an image obtained from said imaging means;

5 means for classifying first categories classifying said image of said defect  
6 candidate extracted by said defect candidate extracting means into a first category;

7 ~~means for classifying second categories classifying said image of said defect~~  
8 candidate extracted by said defect candidate extracting means into a second category; and  
9 means for outputting displaying on a single screen a distribution on said  
10 inspected object of said defect candidates classified in said first category and information  
11 relating to said first category classification and information relating to results of said second  
12 category classification.

1 18. A device for classifying defects as described in claim 17 wherein said  
2 imaging means includes:

3 an electron beam optical system means illuminating and scanning an electron  
4 beam focused on said inspected object;

5 means for detecting detecting, in synchronization with said scanning,  
6 secondary electrons generated from said inspected object by said illumination of said electron  
7 beam focused on said inspected object by said electron beam optical system means; and

8 means for forming images forming a secondary electron image of said  
9 inspected object based on a secondary electron signal detected by said detecting means.

1 19. A device for classifying defects as described in claim 17 wherein said  
2 first category classifying means classifies said defect candidates by defect type.

1 20. A device for classifying defects as described in claim 17 wherein said  
2 defect type includes particle defects, flaw defects, circuit pattern defects, and voltage contrast  
3 defects.

1 21. A device for classifying defects as described in claim 17 wherein said  
2 second category classifying means classifies said defect candidates by defect criticality.

1 22. A device for classifying defects as described in claim 17 wherein said  
2 outputting means outputs on said screen information relating to predicted yield from said  
3 inspected object as said information relating to results of said second category classification.